

## A New Armored Scale Insect from *Araucaria* (Homoptera: Diaspididae)<sup>1</sup>

JOHN W. BEARDSLEY  
UNIVERSITY OF HAWAII  
HONOLULU, HAWAII

(Submitted for publication December, 1964)

The new *Lepidosaphes* described below is the fourth species of armored scale which has been found infesting the Norfolk Island pine, *Araucaria excelsa*, in Hawaii, the others being *Lindingaspis rossi* (Maskell), *Pseudoparlatoria giffardi* Adachi and Fullaway, and *Octaspidiotus araucariae* Adachi and Fullaway. All four species were probably introduced accidentally into Hawaii on propagative material of one or more of the various species of *Araucaria* which are grown here.

Of the four, all but the new species described below have been found associated with *Araucaria* elsewhere, principally in the Australian zoogeographic region where *A. excelsa* and several other species of *Araucaria* are native. Eventually the present species will probably be found infesting *Araucaria* in that region.

Zimmerman (1948) records *Lepidosaphes maskelli* (Cockerell) [as *L. pallida* (Maskell)] from *Araucaria*. I do not know the source of Zimmerman's record, but it seems likely that it may represent an earlier misidentification of the species described below.

*Lepidosaphes araucariae*, new species (fig. 1).

Length of slide-mounted specimens 0.6–0.85 mm. Body elongate, only slightly fusiform, widest across metathorax and abdominal segment 1. Head broad, rounded anteriorly, anterolateral margins not angulate. Abdominal segments 1 to 4 not appreciably or only very slightly produced laterally, not forming noticeably protuberant lateral lobes.

Pygidium with median lobes short, moderately broad, about 11–12  $\mu$  wide at base, with a single weakly developed lateral notch on each side; distance between median lobes about equal to or a trifle less than the width of one. Second pygidial lobes short, but well defined; combined width of both lobules slightly greater than width of one median lobe, both lobules apically rounded. With a definite, but undivided, third pygidial lobe present, this with a fairly well-defined lateral notch on outer margin; apex not serrate. A pair of short gland spines, 9–10  $\mu$  long, between median lobes; a similar gland spine just laterad of median

<sup>1</sup> Published with the approval of the Director of the Hawaii Agricultural Experiment Station as Technical Note No. 16.

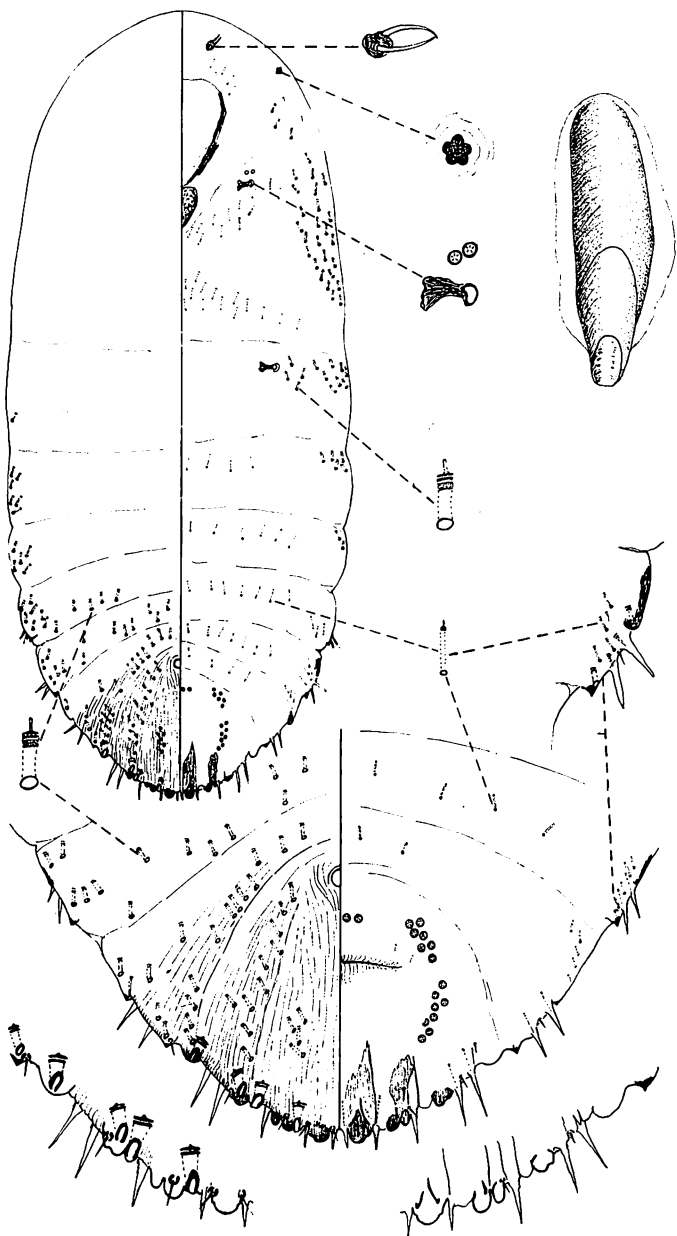


FIGURE 1. *Lepidosaphes araucariae*, new species.

lobe on each side; a longer gland spine, 14–15  $\mu$  in length, laterad of outer lobule of each second lobe; a pair of long gland spines 19–20  $\mu$  in length, on each side beyond third lobe on abdominal segment 6, a pair of slightly shorter gland spines on segment 5, a somewhat shorter pair on segment 4, and a still shorter pair, about 12–13  $\mu$  long, usually discernible on segment 3; gland spines and gland tubercles absent on anterior segments.

Dorsum of pygidium normally with 5 marginal macroducts on each side; the anteriormost located at the base of a small sclerotized triangular spinelike projection on margin of abdominal segment 5; this duct often much smaller than others, sometimes not appreciably larger than dorsal pygidial ducts. Dorsum of posterior abdominal segments with numerous small tubular ducts about 4–5  $\mu$  wide at orifices; 3 or 4 such ducts on each side of abdominal segment 7; 7–10 ducts each side of segment 6; around 15 ducts each side of segment 5; a similar number on segment 4; somewhat fewer on segment 3; a few along lateral margins on segments 1 and 2. Venter of pygidium with around 26–35 perivulvar pores arranged in 5 groups; anterior group with 2 or 3 pores, lateral groups each with 6–9 pores. Ventral prepygidial abdominal segments each with a transverse row of around 8–16 very minute tubular ducts about 2–2.5  $\mu$  wide at orifice; a submarginal group of 3–5 such ducts present on each side on venter of abdominal segments 3 to 5. Similar tubular ducts present in 2 transverse bands on venter of mesothorax, one near posterior margin and one along anterior margin; a few such ducts present on head anterior to mouthparts. A few larger tubular ducts, of the same type as those on the dorsum, present on lateral margins of venter of abdominal segments 1 and 2; in a transverse band extending from the lateral margin to vicinity of the posterior spiracle on each side of the mesothorax, and along the lateral margins on the venter of the mesothorax and prothorax.

Lateral margins of abdominal segments 4 and 5 each with a small sclerotized prominence near each anterior margin and a small pointed sclerotized projection near each posterior margin; these sclerotized protuberances usually with a tubular duct orifice discernible near base.

Antennal tubercles each with 2 fleshy setae about 22–23  $\mu$  long. Anterior spiracles each with 2 or 3 associated disc pores. Lateral eye spots on head roughly star-shaped, appearing as if formed from the coalescence of 5 small round spots. Derm of head without any conspicuous spinelike projections, appearing very minutely granulate.

Female scale very pale brown, the terminal first exuvium amber, about 1.5–2 mm. long. Male scales similar, smaller. Scales occurring singly or in clusters on surface of host needles.

Described from 10 specimens. Holotype and 4 paratypes on one slide; 6 paratypes on 2 slides: Honolulu Zoo, Oahu, X-11-1964, J. W. Beardsley, on *Araucaria excelsa*. Holotype slide in collection of U.S. National Museum, Washington.

In view of the relatively well-developed third pygidial lobes exhibited by this species, there may be some question as to whether it can properly be assigned

to the genus *Lepidosaphes*, or whether it might better be placed in the genus *Unaspis*. However, Ferris (1937) and later Rao (1948) both define *Unaspis* as possessing third lobes which are well developed and deeply bilobed, whereas those of the present species are not bilobed. Also, the median lobes of *araucariae* are of the rounded, well-separated type characteristic of *Lepidosaphes* rather than set close together and more or less recessed, as in the majority of species of *Unaspis*. For the above reasons I have assigned this species to *Lepidosaphes*.

Among previously described species of *Lepidosaphes*, *L. araucariae* is rather similar to *L. maskelli* (Cockerell) and *L. sciadopitysi* McKenzie. It may be separated from these and other similar forms by the smaller, more numerous dorsal tubular ducts, and by the absence of gland spines and gland tubercles on the anterior abdominal segments and metathorax.

#### LITERATURE CITED

- FERRIS, G. F. ATLAS OF SCALE INSECTS OF NORTH AMERICA 1: 259 (No. 128).  
RAO, V. P. 1948. The genus *Unaspis* MacGillivray (Homoptera: Coccoidea: Diaspididae). MICROENT. 14(2): 59-72.  
ZIMMERMAN, E. C. 1948. Homoptera: Sternorhyncha. INSECTS OF HAWAII 5: vii + 464 pp., Univ. Hawaii Press, Honolulu.